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Factsheet

RIDGE TILLAGE PLANTERS

Adam Hayes, Soil and Water Management Branch, Ridgetown

Ridge tillage or till plant as it is known in the United States, is a form of conservation tillage where the crop is planted on a narrow strip of raised soil known as a ridge. This system of planting will leave approximately 40 to 50% residue cover on the soil surface after planting. At planting, the top of the ridge and residue from the previous crop are removed allowing seed placement into bare soil. Soon after the crop has emerged it is cultivated. A few weeks later a second cultivation takes place to rebuild the ridge.

Planting on the ridge and into the heavy residue requires a specially designed planter. A ridge planter has the following two major requirements:

1. clear the top of the ridge
2. seed the crop in the centre of the ridge.

To accomplish these requirements, planters and planter attachments have been manufactured specifically to plant on ridges. The following two sections outline the various planter designs.

Figure 1 Soybean stover between corn rows using ridge tillage.

RIDGE CLEANERS

Ridge clearing devices are designed to push crops residues and soil, including weed seeds off the ridge; leaving a clear surface for the planter unit. The methods of clearing the ridge basically fall under three categories:

1. sweeps;
2. horizontal discs; and
3. vertical discs.

1. Sweeps

Planters or attachments with a sweep usually have a coulter with a depth band in front of the sweep which helps the sweep maintain a constant working depth. The coulter cuts the crop residue making it easier for the sweep to clear the trash from the ridge. The coulter cuts approximately 4 cm (1 1/2") deeper than the sweep, making it easier for the double discs on the planter to penetrate the soil surface. The sweep itself is set at a depth to remove approximately 2.5 cm (1") of soil or to soil moisture. This clears a level band of soil 25 to 36 cm (10" to 14") wide on top of the ridge where the seeding unit operates.

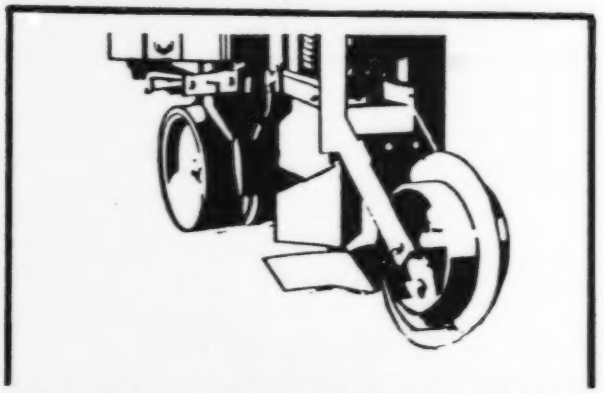

Figure 2 Diagram showing a coulter with depth band followed by a sweep.

2. Horizontal Discs

Horizontal discs are attached in such a manner that they are free to rotate and move trash to one side or the other as it builds up on the front of the disc. There are "wing deflectors" on the rear of the disc attachment to direct residue into the middle of the row. There is usually a

coulter in front of the disc which will cut the crop residue making it easier for the disc to clear the residue. The disc is set at a depth to remove approximately 2.5 cm (1") of soil or to soil moisture, leaving a clear 36 cm (14 ") wide level surface of warm moist soil for planting.

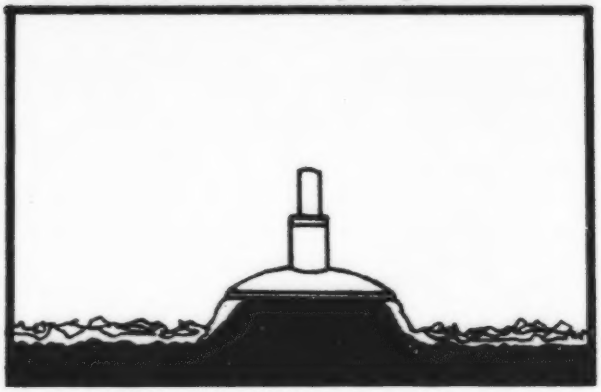

Figure 3 Diagram showing a horizontal disc clearing the top of the ridge.

3. Vertical Discs

Vertical discs usually consist of two vertical discs similar to double discs on a planter except that they are about 20 cm (8") wide at the rear of discs. Sometimes a coulter is used with this system to cut residue and maintain a constant depth. It may be positioned ahead of the discs or between the discs. As the discs rotate they move the residue and soil off of the ridge. The discs are usually off-set at the front to reduce the amount of residue that can move between the discs. Often there is a "sweep" or wing behind the discs to assist in clearing the residue and leveling the cleared band of soil. The discs are set a depth to remove approximately 2.5 cm (1") of soil or to soil moisture leaving a clear level surface less than 36 cm (14") in which to plant.

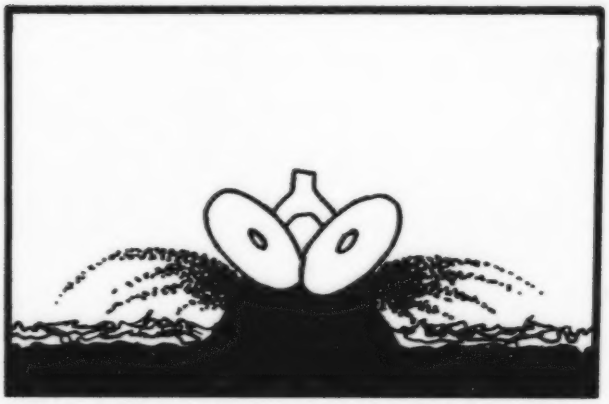

Figure 4 Diagram showing a pair of vertical discs clearing the top of the ridge.

KEEPING THE PLANTER ON THE RIDGE

Keeping the planter centered on the ridge can be a challenge. There are several methods that have been developed and the most appropriate will depend on the type of planter and the topography of the farm. Again there are three methods of achieving this goal. They include:

1. coùlters,
2. large "V" wheels, and
3. small "V" wheels.

1. Coulters

The coulter that is positioned in front of the ridge clearing unit serves to keep the planter on the ridge, cut residue, and provide depth control for the unit. These counters must be properly aligned initially and checked periodically to ensure the planter will track straight. Large stabilizing coulters may be added to the front or the to the rear of the planter to help hold the planter on the ridge.

2. Large "V" Wheels

Large paired angled wheels, 40 cm (15" to 16") in diameter, one on either side of the ridge is an excellent means of holding the planter on the ridge. One pair of "V" wheels on either end of the planter will stabilize the toolbar and assure accurate tracking. They will also keep the toolbar operating at the optimum height from the planting surface.

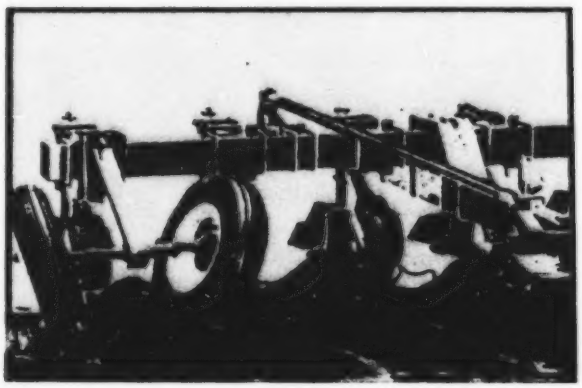

Figure 5 A ridge cleaning unit with large "V" wheels

3. Small "V" Wheels

A few ridge cleaners have two small 15 cm (6") wheels angled on either side of the ridge. In this case each row has a set of "V" wheels to assure accurate ridge tracking. These wheels also provide depth control for the units.

OTHER CONSIDERATIONS

After choosing the planter or planter attachments to plant on the ridge, it is essential that all coulters, disc openers and press wheels are in exact alignment. Failure to do this will make it difficult to keep the planter on the ridge. It is important that the planter is level from front to back to maintain proper depth and cutting angle of the disc or sweep ridge cleaner.

Weight on the planter is very important to ensure proper coulter penetration and an accurate planting depth especially on heavy clay soils. There must be sufficient weight on the

planter to allow the ridge clearing device to clear the top of the ridge without riding on top of the soil surface. As much as 500 kg of weight may be required for a four row planter.

The placement of the starter fertilizer (dry or liquid) in a ridge tillage system, follows the same recommendations as for fertilizer placement in a conventional tillage system.

Planting time is an important consideration as there is not tillage prior to the planting operation. The ridge will dry out and warm up similar to soil that has been conventionally tilled. It is important to check the soil in the ridge and plant when it is at the proper moisture level. As with conventional planters, you should plant at a speed which gives you the proper depth and seed placement desired. Problems occur if the soil crusts. Some form of strip tillage may be needed.

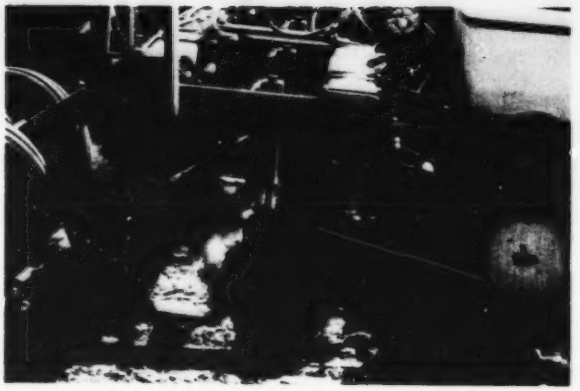

Figure 6 A ridge till planter equipped with horizontal discs and large "V" wheels planting on the ridge.

SUMMARY

A ridge till planter is perhaps the most important part of the ridge till system. Good seed to soil placement is as essential in ridge tillage as in a conventional system. The ridge till planter and ridge clearing unit must be able to remove the top inch of soil and residue from the ridge without plugging and leave a clear planting surface behind.

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